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EXAMINER

THOMPSON, JAMES A

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/788,672

Applicant(s)

OYANAGI ET AL.

Examiner

James A. Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 8, lines 15-18, filed 06 January 2005, with respect to the rejection of claim 18 under 35 USC §101 have been fully considered and are persuasive. The rejection of claim 18 under 35 USC §101 in items 2-3 of the previous office action, dated 30 September 2004, has been withdrawn.

2. Applicant's arguments, see page 8, line 20 to page 9, line 1, filed 06 January 2005, with respect to the rejection of claim 19 under 35 USC §112, 2nd paragraph, have been fully considered and are persuasive. The rejection of claim 19 under 35 USC §112, 2nd paragraph in items 4-5 of said previous office action has been withdrawn.

3. Applicant's arguments filed 06 January 2005 have been fully considered but they are not persuasive.

Regarding page 9, line 9 to page 10, line 7: Examiner has not in any way suggested that either Takeoka (US Patent 6,665,082 B1) or Sakurai (US Patent 5,924,802) *individually* teaches each and every limitation of claim 1. If either reference did teach each and every limitation, then claim 1 would have been rejected under the appropriate paragraph of 35 USC §102. It is the *combination* of Takeoka and Sakurai that renders each and every limitation of claim 1 obvious to one of ordinary skill in the art.

Regarding page 10, line 8 to page 12, line 10: Examiner has in no way suggested that Sakurai teaches the clearer of

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claim 1. Takeoka teaches a clearer and the *combination* of Takeoka and Sakurai fully teaches the clearer specifically set forth in claim 1. Further, Examiner notes that Applicant has not addressed the specific points raised in said previous office action with regard to claim 1. Sakurai does indeed teach a detector (figure 1(8) and column 3, lines 32-33 of Sakurai) configured to detect that a printer cable, which is connected to a computer (figure 1(100) and column 3, lines 21-25 of Sakurai), is unplugged (column 6, lines 8-13 of Sakurai), as specifically recited in claim 1. The cited portion (column 6, lines 8-13 of Sakurai) states:

"it is determined whether or not the power of the printer is on, and *the connection cable is normally connected*. If it is determined that the power of the printer is off *or the cable is disconnected*, the process returns to step S105".

This passage straightforwardly demonstrates the detector specifically recited in claim 1. Further, as clearly set forth in said previous office action, the combination of Takeoka and Sakurai fully teaches each and every aspect of the clearer recited in claim 1. As stated in said previous office action (last line of page 4 to page 5, line 3 of said previous office action), and repeated below:

"Since a printer cable disconnect signal would also indicate that the printer has been deactivated (no longer able to be used), said clearer would clear said printing data upon receiving said disconnect signal."

To elaborate, the clearer taught by Takeoka relies upon a signal that indicates a printer deactivation condition and Sakurai teaches a signal that indicates that the connection cable has been disconnected. Clearly, if the connection cable of a printer has been disconnected, then the printer is no

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longer activated as far as the overall printing system is concerned since, without the connection provided by the connection cable, the printer is clearly unable to print. The combination of the teachings provided by Sakurai to the system taught by Takeoka would therefore be trivial to one of ordinary skill in the art at the time of the invention. One of ordinary skill in the art at the time of the invention would merely be using the type of deactivation signal taught by Sakurai (that the printer cable has been unplugged) instead of the type of deactivation signal taught by Takeoka. In fact, one of ordinary skill in the art at the time of the invention would not even need to *substitute* deactivation signals but would merely need to *add* the printer cable unplug signal as additional signal that would trigger the clearer to function and still fully teach all of the limitations of claim 1. Thus, *by combination*, Takeoka in view of Sakurai teaches a clearer configured to clear printing data received from the computer and stored in a data buffer when the detector detects that the printer cable has been unplugged.

Regarding page 12, line 11 to page 14, line 6: Firstly, Takeoka and Sakurai are clearly in the same field of endeavor. Is Applicant suggesting, such as on page 13, lines 3-6, that printers and printers connected to computers have no clear relationship to one another? Further, Takeoka teaches a printer which clears received printing data if a printer is deactivated. Clearly, if a printer cable is unplugged, as taught by Sakurai, then the printer would be considered to be deactivated. These two concepts, namely printer deactivation as taught by Takeoka and detection of printer cable disconnection as taught by Sakurai, are so closely related that one of ordinary skill in the art would find the combination of Takeoka and Sakurai to be

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a trivial matter. Finally, the motivation to combine the teachings of Sakurai with the teachings of Takeoka has clearly been set forth on page 5, lines 3-7 of said previous office action.

Regarding page 14, line 8 to page 15, line 6: Examiner has not suggested that receiving a print start and a print finish signal is taught by Sakurai. As clearly set forth on the last line of page 7 to page 8, line 3 of said previous office action, Takeoka discloses the print start detector and print finish detector recited in claim 2. Sakurai is relied upon for the teaching of detecting whether a printer cable, which is connected to a computer, is plugged normally or not before attempting to print the printing data, as discussed on page 8, lines 16-19 of said previous office action. The combination of Takeoka and Sakurai, along with sufficient motivation to combine, has been set forth in detail on page 8, line 20 to page 9, line 12 of said previous office action. Applicant has not attempted to address the points raised therein, but *merely alleges* that the combination of references does not fully each and every element of claim 2 and is not combinable.

Regarding page 15, lines 7-16: As discussed in the arguments regarding claim 3 on page 9, line 19 to page 10, line 4 of said previous office action, and repeated below, Sakurai does not teach that the printer has a cable detector which *directly* detects that a printer cable connected to the printer is unplugged. Sakurai teaches that a computer algorithm is performed which, upon completion, determines whether or not there is a printer cable connection (column 5, lines 57-61 and column 6, lines 5-10 of Sakurai). A *direct* detection of a printer cable disconnect would involve some form of sensor that

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determines through direct physical means, whether mechanical or electrical, if the printer cable has been physically removed. In other words, if there is a physical disconnection of the printer cable, a spring sensor or weighting sensor or some form of electrical disconnection sensor or some other form of *direct* contact means will trigger a disconnect signal. Sakurai teaches the use of indirect algorithmic means of detection, not any form of direct means.

Regarding page 15, line 18 to page 16, line 5: It has been clearly demonstrated that claim 2 is rendered obvious by the teachings of Takeoka, Sakurai, and *In re Dulberg*, and Applicant has provided no arguments other than the mere assertion that claims 6-8 are patentable.

Regarding page 16, lines 7-18: It has been clearly demonstrated that claim 2 is rendered obvious by the teachings of Takeoka, Sakurai, and *In re Dulberg*, and Applicant has provided no arguments other than the mere assertion that claim 15 is patentable.

Regarding page 16, line 20 to page 17, line 4: Claim 1 has clearly been demonstrated to be rendered obvious over Takeoka in view of Sakurai, both in the arguments in said previous office action, which are repeated below, and in the rebuttal to Applicant's arguments listed above.

Further, Applicant's contention that embodying digital signals in a carrier wave is not well-known in the prior art is clearly a "boiler plate" argument since the feature is so easily shown to be of instant and unquestionable demonstration as being well-known. Two exemplary references which demonstrate that embodying digital signals in a carrier wave is old and well-known are: (1) "Performance of Digital Phase-Modulation

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Communication Systems", by Charles R. Cahn, *IRE Transactions on Communications Systems* (now *IEEE Transactions on Communications*), vol. 7, no. 1, May 1959, pages 3-6 (hereinafter referred to as Cahn); and (2) US Patent 2,892,888 to R.T. James et al. (hereinafter referred to as James) patented 30 June 1959 and filed 10 February 1958. Cahn clearly teaches embodying digital signals in a carrier wave (page 3, INTRODUCTION, lines 1-8 of Cahn) and that, even in 1959, such embodiment is already well established (page 3, INTRODUCTION, lines 7-8 of Cahn). Further, James clearly teaches embodying digital signals in a carrier wave (column 2, line 70 to column 3, line 3 and column 3, lines 24-26 of James). Given the extreme age of the references (both published in the year 1959), Examiner is clearly correct in stating that "embodying digital information, such as a computer program, in a carrier wave is old, well-known, and expected in the art" and this point need not be further elaborated upon.

Regarding page 17, lines 6-11: Detailed discussions regarding the rejections of newly added claims 20-22 are given below.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1, 9-11, 16-17 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeoka (US Patent 6,665,082 B1) in view of Sakurai (US Patent 5,924,802).

Regarding claims 1 and 16-17: Takeoka discloses a printer (figure 2 of Takeoka) comprising a clearer (figure 2(21) and column 9, lines 66-67 of Takeoka) configured to clear printing data received (column 12, lines 63-65 of Takeoka) from a computer (figure 9 and column 12, lines 58-62 of Takeoka) and stored in a data buffer (figure 2(22) of Takeoka) when a printer deactivation command is received (column 12, lines 63-64 of Takeoka).

Takeoka does not disclose expressly a detector configured to detect that a printer cable, which is connected to a computer, is unplugged; and that said clearer clears said printing data when said detector detects that the printer cable has been unplugged.

Sakurai discloses a detector (figure 1(8) and column 3, lines 32-33 of Sakurai) configured to detect that a printer cable, which is connected to a computer (figure 1(100) and column 3, lines 21-25 of Sakurai), is unplugged (column 6, lines 8-13 of Sakurai).

Takeoka and Sakurai are combinable because they are from the same field of endeavor, namely the control of printers and printer data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the detector taught by Sakurai to detect that a printer cable has been disconnected. Since a printer cable disconnect signal would also indicate that the printer has been deactivated (no longer able to be used), said clearer would clear said printing data upon receiving said disconnect signal. The motivation for

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doing so would have been that a printer cable connection is required for the print data to properly process, as demonstrated by the fact that checking for a print cable connection is a necessary step (figure 5(105) of Sakurai) in transferring print data to the printer for a print-output (figure 5 and column 6, lines 14-16 and lines 25-27 of Sakurai). Therefore, it would have been obvious to combine Sakurai with Takeoka to obtain the invention as specified in claims 1 and 16-17.

Further regarding claim 16: The printer of claim 1 performs the printer control method of claim 16.

Further regarding claim 17: Takeoka discloses performing the operations of the printer using a program stored on a recording medium (figure 2(23) and column 10, lines 3-4 of Takeoka).

Regarding claims 9 and 22: Takeoka discloses a printer (figure 2 of Takeoka) comprising a data buffer (figure 2(22) of Takeoka) configured to temporarily store printing data received from a computer (figure 9 and column 12, lines 58-64 of Takeoka); and a clearer (figure 2(21) and column 9, lines 66-67 of Takeoka) configured to clear the printing data stored in the data buffer when a printer deactivation command is received (column 12, lines 63-64 of Takeoka).

Takeoka does not disclose expressly a cable detector configured to detect whether a printer cable, which is connected to a computer, is plugged normally or not; and that said clearer clears said printing data when said cable detector detects that the printer cable has been unplugged.

Sakurai discloses a cable detector (figure 1(8) and column 3, lines 32-33 of Sakurai) configured to detect whether a printer cable, which is connected to a computer (figure 1 (100)

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and column 3, lines 21-25 of Sakurai), is plugged normally or not (column 6, lines 8-13 of Sakurai).

Takeoka and Sakurai are combinable because they are from the same field of endeavor, namely the control of printers and printer data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the cable detector taught by Sakurai to detect whether a printer cable has been connected normally or not. Since a printer cable disconnect signal would also indicate that the printer has been deactivated (no longer able to be used), said clearer would clear said printing data upon receiving said disconnect signal. The motivation for doing so would have been that a printer cable connection is required for the print data to properly process, as demonstrated by the fact that checking for a print cable connection is a necessary step (figure 5(105) of Sakurai) in transferring print data to the printer for a print-output (figure 5 and column 6, lines 14-16 and lines 25-27 of Sakurai). Therefore, it would have been obvious to combine Sakurai with Takeoka to obtain the invention as specified in claims 9 and 22.

Further regarding claim 22: The printer of claim 9 performs the printer control method of claim 22.

Further regarding claim 10: Sakurai discloses that the cable detector monitors a voltage of a power bus of the printer cable (figure 5(S105) of Sakurai), judges that the printer cable is unplugged when the voltage is not detected (column 6, lines 10-12 of Sakurai), and judges that the printer cable is plugged in when the voltage is detected (column 6, lines 14-16 of Sakurai). Since the existence or absence of the power supplied to the printer is monitored (column 6, lines 10-12 and lines 14-16 of Sakurai), the existence or absence of the voltage of said

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power is inherently monitored. As is well known in the art, $\text{Power} = \text{Voltage} \times \text{Current}$ and $\text{Voltage} = \text{Current} \times \text{Resistance}$. Since a printer will inherently have a finite, non-zero resistance, any non-zero voltage will produce a non-zero current and any non-zero current will produce a non-zero voltage. Therefore, the presence of electrical power is inherently indicative of the presence of voltage and the absence of electrical power is inherently indicative of the absence of voltage.

Further regarding claim 11: As discussed above in the arguments regarding claim 9, said clearer clears said printing data when said cable detector detects that the printer cable has been unplugged. Sakurai discloses that the printer performs a predetermined initialization (figure 5(S108-S109) of Sakurai) when said cable detector detects that the printer is plugged (column 6, lines 14-17 and lines 21-25 of Sakurai). Since said clearer clears said printing data when said cable detector detects that the printer cable has been unplugged, and since plugging the printer cable back in would naturally occur after said printer cable has been unplugged, said initialization would inherently occur after said clearer has cleared the printing data stored in the data buffer.

Regarding claim 21: Takeoka discloses detecting that a print start signal, which indicates a start of a transmission of printing data (column 10, lines 21-24 of Takeoka), is received from the computer (figure 9 of Takeoka) (column 10, lines 21-26 of Takeoka); temporarily storing the printing data received from the computer (figure 9 and column 12, lines 58-64 of Takeoka) in a data buffer (figure 2(22) of Takeoka); detecting that a print finish signal (printer deactivation command), which indicates a

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finish of the transmission of the printing data, is received from the computer (column 12, lines 60-65 of Takeoka); and clearing the printing data stored in the data buffer when a printer deactivation command is received (column 12, lines 63-64 of Takeoka).

Takeoka does not disclose expressly that the printing data stored in the data buffer is cleared when the print start signal is received again from the computer or another computer after the print start detector has detected the print start signal and before the print finish detector detects the print finish signal.

Sakurai further discloses detecting whether a printer cable, which is connected to a computer (figure 1(100) and column 3, lines 21-25 of Sakurai), is plugged normally or not (column 6, lines 8-10 of Sakurai) before attempting to print the printing data (column 6, lines 10-13 of Sakurai).

Takeoka and Sakurai are combinable because they are from the same field of endeavor, namely the control of printers and printer data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to detect whether a printer cable has been connected normally or not. Since a printer cable disconnect signal would also indicate that the printer has been deactivated (no longer able to be used), said clearer would clear said printing data upon receiving said disconnect signal. After reconnection, the printer would be able to print normally again. Thus, said printer would not have received a print finish signal from the computer since the printer would have been disconnected, but would proceed, after reconnection, to receive a print start signal from the computer and print the next set of print data. The motivation for doing

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so would have been that a printer cable connection is required for the print data to properly process, as demonstrated by the fact that checking for a print cable connection is a necessary step (figure 5(105) of Sakurai) in transferring print data to the printer for a print-output (figure 5 and column 6, lines 14-16 and lines 25-27 of Sakurai). Therefore, it would have been obvious to combine Sakurai with Takeoka to obtain the invention as specified in claim 21.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeoka (US Patent 6,665,082 B1) in view of Sakurai (US Patent 5,924,802) as applied to claim 9 above, and further in view of Ryu (US Patent 5,978,921).

Regarding claim 20: Takeoka discloses that the printer has operating keys and a status display circuit (figure 2(24) of Takeoka) for selecting the settings of the printer and displaying the status of the printer (column 10, lines 9-13 of Takeoka). The printing data stored in the data buffer is cleared based on a printer deactivation command (column 12, lines 63-65 of Takeoka) and the operations of the printer are controlled by the system controller (column 9, lines 66-67 of Takeoka). The printer of Takeoka does not have a control panel for the user to operate for clearing the printing data stored in the data buffer.

Takeoka in view of Sakurai does not disclose expressly that the printer does not have a power switch for a user to turn ON/OFF a power supply.

Ryu discloses the control of the power of a peripheral device by the computer system (figures 7A-7B and column 6, lines

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30-34 of Ryu), and therefore by computer software embodied in said computer system.

Takeoka in view of Sakurai is combinable with Ryu because they are from the same field of endeavor, namely the control of computer peripheral devices. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use software to control the power of the peripheral, as taught by Ryu, said peripheral being the printer taught by Takeoka in view of Sakurai. Since software is used to control the power of the printer, and not a power switch, then the printer would not have a power switch for a user to turn ON/OFF a power supply. The motivation for doing so would have been to save electrical power when a peripheral device is not in use (column 1, lines 13-18 of Ryu). Therefore, it would have been obvious to combine Ryu with Takeoka in view of Sakurai to obtain the invention as specified in claim 20.

7. Claims 2-5 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeoka (US Patent 6,665,082 B1) in view of Sakurai (US Patent 5,924,802) and *In re Dulberg* (289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961)).

Regarding claim 2: Takeoka discloses a printer (figure 2 of Takeoka) comprising a print start detector (figure 2(25) of Takeoka) configured to detect that a print start signal, which indicates a start of a transmission of printing data (column 10, lines 21-24 of Takeoka), is received from the computer (figure 9 of Takeoka) (column 10, lines 21-26 of Takeoka); a data buffer (figure 2(22) of Takeoka) configured to temporarily store the printing data received from the computer (figure 9 and column 12, lines 58-64 of Takeoka); a print finish detector (figure

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2(25) of Takeoka) configured to detect that a print finish signal (printer deactivation command), which indicates a finish of the transmission of the printing data, is received from the computer (column 12, lines 60-65 of Takeoka); and a clearer (figure 2(21) and column 9, lines 66-67 of Takeoka) configured to clear the printing data stored in the data buffer when a printer deactivation command is received (column 12, lines 63-64 of Takeoka).

Takeoka does not disclose expressly that said clearer clears the printing data stored in the data buffer when the print start signal is received again from the computer or another computer after the print start detector has detected the print start signal and before the print finish detector detects the print finish signal; and that the print start detector and print finish detector are separate devices.

Sakurai further discloses detecting whether a printer cable, which is connected to a computer (figure 1(100) and column 3, lines 21-25 of Sakurai), is plugged normally or not (column 6, lines 8-10 of Sakurai) before attempting to print the printing data (column 6, lines 10-13 of Sakurai).

Takeoka and Sakurai are combinable because they are from the same field of endeavor, namely the control of printers and printer data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to detect whether a printer cable has been connected normally or not. Since a printer cable disconnect signal would also indicate that the printer has been deactivated (no longer able to be used), said clearer would clear said printing data upon receiving said disconnect signal. After reconnection, the printer would be able to print normally again. Thus, said printer would not have

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received a print finish signal from the computer since the printer would have been disconnected, but would proceed, after reconnection, to receive a print start signal from the computer and print the next set of print data. The motivation for doing so would have been that a printer cable connection is required for the print data to properly process, as demonstrated by the fact that checking for a print cable connection is a necessary step (figure 5(105) of Sakurai) in transferring print data to the printer for a print-output (figure 5 and column 6, lines 14-16 and lines 25-27 of Sakurai). Therefore, it would have been obvious to combine Sakurai with Takeoka.

Takeoka in view of Sakurai does not disclose expressly that the print start detector and print finish detector are separate devices. However, it would have been obvious to one of ordinary skill the art at the time of the invention to embody said print start detector and said print finish detector in two separate units since *In re Dulberg* has held that making parts separable is an obvious design choice if there are no novel and unexpected results.

Further regarding claim 3: Sakurai discloses an algorithm (figure 5 of Sakurai) that is performed by the computer (column 5, lines 57-61 of Sakurai) which includes detecting whether the printer cable is connected normally or not (figure 5(S105) and column 6, lines 5-10 of Sakurai). Since the detection of whether or not the printer cable is connected normally is accomplished by the execution of an algorithm by a computer, then the printer does not have a cable connector which *directly* detects that a printer cable connected to the computer is unplugged. Said detection is performed indirectly via a computer algorithm.

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Regarding claim 5: Takeoka discloses that the print start signal is a predetermined string (figure 2(25C) and column 10, lines 15-21 of Takeoka) which the computer transmits before a start of the transmission of the printing data (column 6, lines 60-67 of Takeoka). The device ID data is part of the data that is transmitted (column 10, lines 15-21 of Takeoka) and is transmitted as part of the cycle-start packet, which is transmitted first (column 6, lines 60-67 of Takeoka), and therefore before the transmission of the printing data.

Regarding claim 12: Takeoka discloses a print start detector (figure 2(25) of Takeoka) configured to detect that a print start signal, which indicates a start of a transmission of the printing data (column 10, lines 21-24 of Takeoka), is received from the computer (figure 9 of Takeoka) (column 10, lines 21-26 of Takeoka); a print finish detector (figure 2(25) of Takeoka) configured to detect that a print finish signal (printer deactivation command), which indicates a finish of the transmission of the printing data, is received from the computer (column 12, lines 60-65 of Takeoka).

Takeoka does not disclose expressly that said clearer clears the printing data stored in the data buffer when the cable detector detects that the printer cable is unplugged after the print start detector has detected the print start signal and before the print finish detector detects the print finish signal; and that the print start detector and print finish detector are separate devices.

Sakurai further discloses detecting whether a printer cable, which is connected to a computer (figure 1(100) and column 3, lines 21-25 of Sakurai), is plugged normally or not.

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(column 6, lines 8-10 of Sakurai) before attempting to print the printing data (column 6, lines 10-13 of Sakurai).

Takeoka and Sakurai are combinable because they are from the same field of endeavor, namely the control of printers and printer data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to detect whether a printer cable has been connected normally or not. Since a printer cable disconnect signal would also indicate that the printer has been deactivated (no longer able to be used), said clearer would clear said printing data upon receiving said disconnect signal. After reconnection, the printer would be able to print normally again. Thus, said printer would not yet have received a print finish signal from the computer since the printer would have been disconnected. The motivation for doing so would have been that a printer cable connection is required for the print data to properly process, as demonstrated by the fact that checking for a print cable connection is a necessary step (figure 5(105) of Sakurai) in transferring print data to the printer for a print-output (figure 5 and column 6, lines 14-16 and lines 25-27 of Sakurai). Therefore, it would have been obvious to combine Sakurai with Takeoka.

Takeoka in view of Sakurai does not disclose expressly that the print start detector and print finish detector are separate devices. However, it would have been obvious to one of ordinary skill the art at the time of the invention to embody said print start detector and said print finish detector in two separate units since *In re Dulberg* has held that making parts separable is an obvious design choice if there are no novel and unexpected results.

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Regarding claims 4 and 13: Takeoka discloses that the print start signal is a device ID request (figure 2(25C) and column 10, lines 15-21 of Takeoka) which the computer transmits for confirming a model of the printer (column 10, lines 20-21 of Takeoka).

Regarding claim 14: Takeoka discloses that the print start signal is a predetermined string (figure 2(25C) and column 10, lines 15-21 of Takeoka) which the computer transmits before a start of the transmission of the printing data (column 6, lines 60-67 of Takeoka). The device ID data is part of the data that is transmitted (column 10, lines 15-21 of Takeoka) and is transmitted as part of the cycle-start packet, which is transmitted first (column 6, lines 60-67 of Takeoka), and therefore before the transmission of the printing data.

8. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeoka (US Patent 6,665,082 B1) in view of Sakurai (US Patent 5,924,802) and *In re Dulberg* (289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961)) as applied to claim 2 above, and further in view of Han (US Patent 5,991,542).

Regarding claim 6: Takeoka in view of Sakurai and *In re Dulberg* does not disclose expressly that said print start signal is a cable plug/unplug effective command which the computer transmits before a start of the transmission of the printing data, and said print finish signal is a cable plug/unplug ineffective command which the computer transmits after a finish of the printing data.

Han discloses mounting a drive image at a computer before launching a specific application (column 9, lines 46-50 of Han). The mounted drive image is marked as "owned" by said specific

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application (column 9, lines 55-57 of Han). Once said specific application finishes processing, said drive image is unmounted by the computer (column 9, lines 57-61 of Han), which inherently requires the sending of some unmount signal.

Takeoka in view of Sakurai and *In re Dulberg* is combinable with Han because they are from the same field of endeavor, namely the control of computer peripheral devices. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to mount and mark as owned a peripheral device before executing a computer process and unmounting said peripheral device when said computer process is completed, as taught by Han, said peripheral device being the printer taught by Takeoka in view of Sakurai and *In re Dulberg*. The mounting and owning signal would be the same as a cable plug/unplug effective command since both confirm the connection of the peripheral device and mark said peripheral device for a particular use. The unmounting signal would be the same as a cable plug/unplug ineffective command since both reset the connection to the peripheral device and the associated variables since said peripheral device is no longer being used. The motivation for doing so would have been to associate different peripheral devices with different specific, pre-defined actions (column 9, lines 29-31 of Han). Therefore, it would have been obvious to combine Han with Takeoka in view of Sakurai and *In re Dulberg* to obtain the invention as specified in claim 6.

Regarding claim 7: Takeoka discloses a packet receiving detector (figure 2(25) of Takeoka) configured to detect that the printer is receiving any packet (column 10, lines 21-24 of Takeoka); and that the clearer (figure 2(21) of Takeoka) clears the printing data stored in the data buffer (column 12, lines

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37-41 of Takeoka) if the packet receiving detector detects that the printer is receiving the packet (column 12, lines 18-20 of Takeoka) even when the print start signal is received (column 12, lines 7-10 of Takeoka). The printing data received by the printer is stored successively in FIFO memory (column 12, lines 37-41 of Takeoka), which means that when the printing data in the FIFO memory has been read out, it will be replaced by further printing memory, and thus cleared. The image data is sent when the printing head starts to operate (column 12, lines 7-10 of Takeoka), and thus when the print start signal is received (column 10, lines 31-33 of Takeoka).

Takeoka does not disclose expressly that said packet receiving detector is a separate unit.

Takeoka in view of Sakurai does not disclose expressly that said packet receiving detector is a separate unit. However, it would have been obvious to one of ordinary skill the art at the time of the invention to embody said packet receiving detector as a separate unit since *In re Dulberg* has held that making parts separable is an obvious design choice if there are no novel and unexpected results.

Regarding claim 8: Takeoka discloses that a plurality of logical channels are established between the computer and the printer (figure 2(channels between 10 and 25, 25A, 25B, 25C) and column 10, lines 13-21 of Takeoka), and the cable plug/unplug effective command and the cable plug/unplug ineffective command are transmitted and received by at least one of the logical channels (column 10, lines 13-21 of Takeoka). The communication control circuit (figure 2(25) of Takeoka) controls the transmission of data to the printer (column 10, lines 13-21 of

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Takeoka) and therefore the cable plug/unplug effective command and the cable plug/unplug ineffective command.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeoka (US Patent 6,665,082 B1) in view of Sakurai (US Patent 5,924,802) and *In re Dulberg* (289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961)) as applied to claim 2 above, and further in view of Ryu (US Patent 5,978,921).

Regarding claim 15: Takeoka discloses that the printer has operating keys and a status display circuit (figure 2(24) of Takeoka) for selecting the settings of the printer and displaying the status of the printer (column 10, lines 9-13 of Takeoka). The printing data stored in the data buffer is cleared based on a printer deactivation command (column 12, lines 63-65 of Takeoka) and the operations of the printer are controlled by the system controller (column 9, lines 66-67 of Takeoka). The printer of Takeoka does not have a control panel for the user to operate for clearing the printing data stored in the data buffer.

Takeoka in view of Sakurai and *In re Dulberg* does not disclose expressly that the printer does not have a power switch for a user to turn ON/OFF a power supply.

Ryu discloses the control of the power of a peripheral device by the computer system (figures 7A-7B and column 6, lines 30-34 of Ryu), and therefore by computer software embodied in said computer system.

Takeoka in view of Sakurai and *In re Dulberg* is combinable with Ryu because they are from the same field of endeavor, namely the control of computer peripheral devices. At the time of the invention, it would have been obvious to a person of

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ordinary skill in the art to use software to control the power of the peripheral, as taught by Ryu, said peripheral being the printer taught by Takeoka in view of Sakurai and *In re Dulberg*. Since software is used to control the power of the printer, and not a power switch, then the printer would not have a power switch for a user to turn ON/OFF a power supply. The motivation for doing so would have been to save electrical power when a peripheral device is not in use (column 1, lines 13-18 of Ryu). Therefore, it would have been obvious to combine Ryu with Takeoka in view of Sakurai and *In re Dulberg* to obtain the invention as specified in claim 15.

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeoka (US Patent 6,665,082 B1) in view of Sakurai (US Patent 5,924,802) and well-known prior art.

Regarding claim 19: The arguments regarding claim 17 are incorporated herein. Takeoka in view of Sakurai does not disclose expressly that said program is embodied in a carrier wave.

Official Notice is Taken that embodying digital information, such as a computer program, in a carrier wave is old, well-known, and expected in the art. It would have been obvious to one of ordinary skill in the art to embody the program of claim 17 in a carrier wave since a carrier wave is simply another useful means of transmitting digital data.

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Art Unit 2624

JAT
11 May 2005



THOMAS D.
~~TOMMY~~ LEE
PRIMARY EXAMINER